



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/527,088

10/03/2005

Marc Fleury

612.44794X00

2809

20457

7590

11/29/2007

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER

VARGAS, DIXOMARA

ART UNIT

PAPER NUMBER

2859

MAIL DATE

DELIVERY MODE

11/29/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/527,088	Applicant(s) FLEURY ET AL.	
	Examiner Dixomara Vargas	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication; even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The specification fails to disclose or suggest the step wherein the porous rock sample is obtained from an underground formation containing an effluent; and further comprising determining a fluid suited for effluent displacement from the analyzing of the porous rock sample; and using the fluid suited for effluent displacement to provide enhanced recovery of the effluent from the formation by effluent displacement.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 21-44 are rejected under 35 U.S.C. 101 because the claimed invention is directed to a judicial exception statutory subject matter.

The claimed invention is directed to a judicial exception to 35 U.S.C. 101 (i.e., an abstract idea) and is not directed to a practical application of such judicial exception (e.g., because the claim does not require any physical transformation and the invention as claimed does not produce a useful, concrete, and tangible result). The language in the claim suggest only

Art Unit: 2859

a combination of instructions without reciting a structure associated to the procedure and lacks a tangible result at the end of the procedure.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 42 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification fails to disclose or suggest the step wherein the porous rock sample is obtained from an underground formation containing an effluent; and further comprising determining a fluid suited for effluent displacement from the analyzing of the porous rock sample; and using the fluid suited for effluent displacement to provide enhanced recovery of the effluent from the formation by effluent displacement.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2859

7. Claims 21-23 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Baldwin (US 5,162,733 A).

With respect to claim 21, Baldwin discloses a method for analyzing a porous rock sample by measuring the wettability of a porous rock sample in the presence of water and oil, comprising determining a water wet pore surface of the sample and an oil wet pore surface of the sample when the sample is saturated with water and oil, and calculating the wettability index from a combination of the water wet pore surface and the oil wet pore surface (Abstract, Columns 2 and 9, lines 47-60 and 10-30 respectively).

8. With respect to claim 22, Baldwin discloses the step wherein the water wet pore surface and of the oil wet pore surface is determined when the sample is saturated with water and oil from measurements (Column 2, lines 47-60) of relaxation times obtained from the surfaces of the sample placed in a nuclear magnetic resonance device (Column 4, lines 27-45).

9. With respect to claim 23, Baldwin discloses the step wherein the wettability index is

obtained by the relation:
$$I_{NMR} = \frac{SM_w - SM_o}{SM_w + SM_o}$$
 where SM_w is the water wet pore surface and SM_o is the oil wet pore surface when the porous rock sample is saturated with water and oil (Column 9, lines 1-30).

10. With respect to claim 30, Baldwin discloses the step wherein the wettability index is

obtained by the relation:
$$I_{NMR} = \frac{SM_w - SM_o}{SM_w + SM_o}$$
 where SM_w is the water wet pore surface and SM_o is the oil wet pore surface when the porous rock sample is saturated with water and oil (Column 9, lines 1-30).

Allowable Subject Matter

11. Claims 24-29 and 31-44 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 101, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. Claims 24-29 and 31-44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

a. With respect to claim 24, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the wettability index is obtained by the relation:

$$I_{NMR} = \log_{10} \frac{SM_w}{SM_o}$$
 where SM_w is the water wet pore surface and SM_o is the oil wet pore surface when the porous rock sample is saturated with water and oil in combination with the remaining limitations of the claim.

b. With respect to claim 25, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the wettability index is determined by the following operations:

a) measuring the relaxation times of the water-saturated sample;

Art Unit: 2859

b) measuring the relaxation times of the sample in the presence of oil and water, in a zone close to saturation of the sample;

c) measuring the relaxation times of the water in the sample in the presence of oil, in a zone close to residual saturation;

d) measuring the relaxation times of the sample in a state where its 100% oil saturation point is reached; and

e) combining the measurements of the relaxation times obtained from a)-d) so as to obtain the wettability index in combination with the remaining limitations of the claims 21 and 22 above.

c. With respect to claims 26, 27, 29, 37, 38 and 39, the claims have been found allowable due to its dependency on claim 25 above.

d. With respect to claim 28, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the oil has an intrinsic relaxation time as great as possible and as close as possible to that of the water is selected in combination with the remaining limitations of the claim 21 above.

e. With respect to claim 31, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the wettability index is obtained by the relation:

$$I_{NMR} = \log_{10} \frac{SM_w}{SM_o}$$

where SM_w is the water wet pore surface and SM_o is the oil wet pore

surface when the porous rock sample is saturated with water and oil in combination with the remaining limitations of the claims 21 and 22 above.

f. With respect to claim 32, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the wettability index is determined by the following operations:

a) measuring the relaxation times of the water-saturated sample;

b) measuring the relaxation times of the sample in the presence of oil and water, in a zone approaching saturation of the sample;

c) measuring the relaxation times of the water in the sample in the presence of oil, in a zone approaching residual saturation;

d) measuring the relaxation times of the sample in a state where its 100% oil saturation point is reached; and

e) combining the measurements of the relaxation times obtained from a)-d) so as to obtain the wettability index in combination with the remaining limitations of the claims 21 and 23 above.

g. With respect to claim 33, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the wettability index is determined by the following operations:

Art Unit: 2859

- a) measuring the relaxation times of the water-saturated sample;
 - b) measuring the relaxation times of the sample in the presence of oil and water,
in a zone approaching saturation of the sample;
 - c) measuring the relaxation times of the water in the sample in the presence of oil,
in a zone approaching residual saturation;
 - d) measuring the relaxation times of the sample in a state where its 100% oil
saturation point is reached; and
 - e) combining the measurements of the relaxation times obtained from a)-d) so as
to obtain the wettability index in combination with the remaining limitations of the claims 21 and
24 above.
- h. With respect to claim 34, the claim has been found allowable over the prior art of
record because the prior art of record fails to teach or fairly suggest a method for
measuring a wettability of a porous rock sample in a presence of water and oil
comprising the step wherein the oil has an intrinsic relaxation time as great as possible
and as close as possible to that of the water is selected in combination with the remaining
limitations of the claims 21 and 22 above.
- i. With respect to claim 35, the claim has been found allowable over the prior art of
record because the prior art of record fails to teach or fairly suggest a method for
measuring a wettability of a porous rock sample in a presence of water and oil
comprising the step wherein the oil has an intrinsic relaxation time as great as possible
and as close as possible to that of the water is selected in combination with the remaining
limitations of the claims 21 and 23 above.

Art Unit: 2859

j. With respect to claim 36, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the oil has an intrinsic relaxation time as great as possible and as close as possible to that of the water is selected in combination with the remaining limitations of the claims 21 and 24 above.

k. With respect to claim 40, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the wettability index is determined by the following operations:

a) measuring the relaxation times of the water-saturated sample;

b) measuring the relaxation times of the sample in the presence of oil and water, in a zone approaching saturation of the sample;

c) measuring the relaxation times of the water in the sample in the presence of oil, in a zone approaching residual saturation;

d) measuring the relaxation times of the sample in a state where its 100% oil saturation point is reached; and

e) combining the measurements of the relaxation times obtained from a)-d) so as to obtain the wettability index in combination with the remaining limitations of the claims 21, 22 and 30 above.

Art Unit: 2859

1. With respect to claim 41, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the wettability index is determined by the following operations:
 - a) measuring the relaxation times of the water-saturated sample;
 - b) measuring the relaxation times of the sample in the presence of oil and water, in a zone approaching saturation of the sample;
 - c) measuring the relaxation times of the water in the sample in the presence of oil, in a zone approaching residual saturation;
 - d) measuring the relaxation times of the sample in a state where its 100% oil saturation point is reached; and
 - e) combining the measurements of the relaxation times obtained from a)-d) so as to obtain the wettability index in combination with the remaining limitations of the claims 21, 22 and 31 above.
- m. With respect to claim 42, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for analyzing a porous rock sample by measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the porous rock sample is obtained from an underground formation containing an effluent; and further comprising determining a fluid suited for effluent displacement from the analyzing of the porous rock sample; and using the fluid suited for effluent displacement to provide enhanced recovery

of the effluent from the formation by effluent displacement in combination with the remaining limitations of the claim 21 above.

n. With respect to claim 43, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for analyzing a porous rock sample by measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the porous rock sample is obtained from an underground formation; and further comprising evaluating a degree of pollution of the formation from the analyzing of the porous rock sample in combination with the remaining limitations of the claim 21 above.

o. With respect to claim 44, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a method for analyzing a porous rock sample by measuring a wettability of a porous rock sample in a presence of water and oil comprising the step wherein the porous rock sample is a building material; and further comprising using the analyzing of the porous rock sample to determine a waterproofing treatment using the porous rock sample in combination with the remaining limitations of the claim 21 above.

Response to Arguments

14. Applicant's arguments filed 08/14/07 have been fully considered but they are not persuasive.

15. Applicant argues that the 35 U.S.C. 101 rejection should be withdrawn in view of the current amendment reciting “ a method for analyzing a porous rock sample by measuring a

Art Unit: 2859

wettability” since the analyzes of a porous rock sample has a numerous applications in the physical world and is a useful process wherein a tangible result will be the calculation of the wettability index which is a known useful parameter.

16. The examiner disagrees with applicant’s argument because the step of analyzing does not constitute a tangible result since said calculation of a parameter is performed by the computer with a computer program. The calculation of a parameter per se is not considered a tangible result. However, when said resulting parameter is display in a computer in a form of a graph or table or list of values or stored in a computer in such a way that said parameter will be available to the user, then said parameter becomes a tangible result since the user will be able to see the value and utilize it. For the reasons stated above, the 35 U.S.C. 101 rejection is maintained and considered proper.

17. Applicant argues that Baldwin fails to teach or fairly suggest the step of calculating the wettability index from a combination of the water wet pore surface and the oil wet pore surface.

18. The examiner disagrees with applicant’s argument because Baldwin discloses the step wherein the oil wet pore surface represented by equation #6 (Column 8, lines 20-24) wherein Baldwin discloses said equation is related to a parameter value of a oil wettable core (Columns 7-8, lines 65-68 and 1-15 respectively) and the water wet pore surface represented by equation #9 (Column 8, lines 66-67) wherein Baldwin discloses said equation is related to a parameter value of a water wettable core (Column 8, lines 41-65). Furthermore, both wettable cores are considered to be applicant’s wet pore surfaces since the wet cores are saturated wet surfaces. In addition, Baldwin discloses that both, water and oil wettable core parameters, are combined to calculate the wettability index or the rock (Column 9, lines 10-30). If applicant means that the

Art Unit: 2859

wet pore surfaces calculations are to determine the relaxation time for each, oil and water, case and use said relaxation time values of each pore surface to determine the wettability of the sample, the applicant is reminded that said limitations are not recited nor suggested by the claim language.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

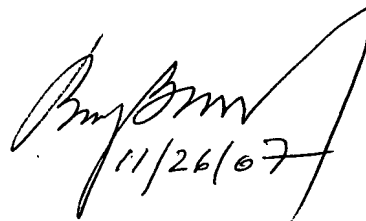
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is (571) 272-2252. The examiner can normally be reached on Monday to Thursday from 8:00 am. to 4:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean A. Reichard can be reached on (571) 272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2859

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dixomara Vargas
Patent Examiner
Art Unit 2859

A handwritten signature in black ink, appearing to read 'Brij Shrivastav', with the date '11/26/07' written below it.

BRIJ SHRIVASTAV
PRIMARY EXAMINER